

WHAT IS CLAIMED IS:

1. A semiconductor device including a surge protection circuit electrically connected to a signal input terminal and having a diode and a transistor, comprising:

a semiconductor substrate having a main surface;

5 a field oxide film formed at the main surface of said semiconductor substrate; and

a first conductive layer formed on the main surface of said semiconductor substrate and electrically connected to said signal input terminal,

10 said diode having its cathode including a first cathode region and a second cathode region, said first cathode region being electrically connected to said first conductive layer and formed at the main surface of said semiconductor substrate, and said second cathode region constituting, together with an anode region of said diode, a pn junction where Zener
15 breakdown occurs, and

said pn junction where the Zener breakdown occurs being distant from said field oxide film.

2. The semiconductor device according to claim 1, wherein
said cathode and a collector of said transistor are electrically
connected to said signal input terminal, and said anode and a base of said
transistor are formed to be of the same conductivity type and electrically
5 connected to each other.

3. The semiconductor device according to claim 1, wherein
said second cathode region is formed to cover a side or upper surface
of said anode region.

4. The semiconductor device according to claim 1, wherein
said anode region is formed to cover a side or upper surface of said
second cathode region.

5. The semiconductor device according to claim 1, wherein said anode region and said second cathode region constituting the pn junction where Zener breakdown occurs are both formed within an epitaxial layer formed in said semiconductor substrate.

6. The semiconductor device according to claim 1, wherein said transistor has its collector including an epitaxial layer formed in said semiconductor substrate and a first buried layer formed in said epitaxial layer,

5 said transistor has its base including a second buried layer formed in said epitaxial layer, and

said first buried layer has its impurity concentration higher than that of said epitaxial layer and is adjacent to said second buried layer.

7. The semiconductor device according to claim 6, wherein a part of said second buried layer that is adjacent to said first buried layer is a low-concentration region having a relatively low impurity concentration.

8. The semiconductor device according to claim 7, further comprising a second conductive layer formed on the main surface of said semiconductor substrate, wherein

5 the base and the emitter of said transistor are both electrically connected to said second conductive layer.

9. The semiconductor device according to claim 1, wherein said transistor has its collector including an epitaxial layer formed in said semiconductor substrate and a diffusion layer formed in said epitaxial layer, and said diffusion layer has its impurity concentration
5 higher than that of said epitaxial layer.